

DETAIL SHEET

BRIFEN WRSB (4 ROPE)

Details

Category:	Longitudinal
Sub Category:	Flexible
Main Material:	Wire Rope
Gating/Non Gating:	NA
Redirective/ Non- Redirective:	Redirective
Permanent/ Temporary:	Permanent

Ownership & Supplier

Hill & Smith
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Accepted Test Level

NCHRP 350 Test Level 4 (TL4).

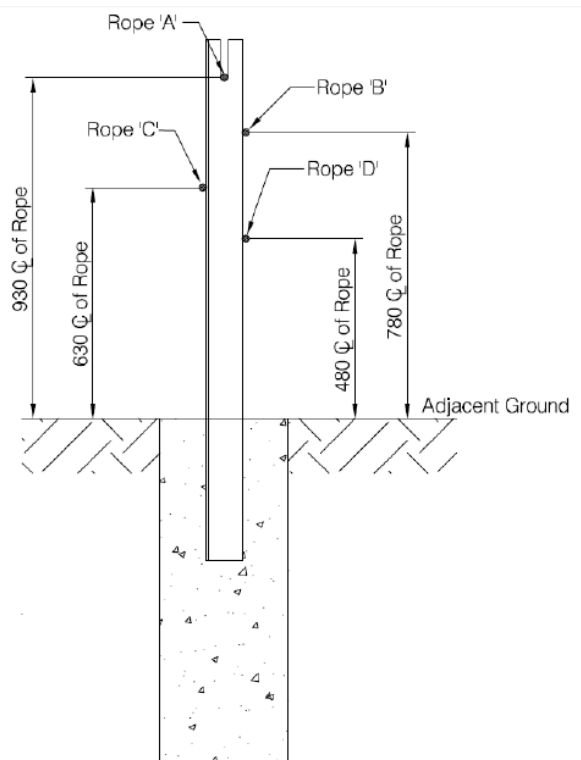
Note: There is a TL-3 version of the Brifen Four Wire Rope Safety Barrier that is no longer accepted in Victoria.

Description

The Brifen Four Wire Rope Safety Barrier (WRSB) is a flexible barrier system consisting of four wire ropes supported on steel posts with variable spacing. The wire ropes are 19mm wire rope cables with heights of 480mm, 630mm, 720mm and 930mm above ground. The bottom three cables are interwoven between posts with the top cable set in a slot cut into the top of each post. This system is suitable for both the outer verge and the median.



Drawing



Design

- Design shall be in accordance with the Supplier Brifen Installation and Maintenance Manual.

Post Spacing Range

- Class A and Class B configurations shall be in accordance with RDN 06-02.

Class A:	Class B:
2.0m – 3.5m as per RDN 06-02	6.4m Post Spacing 41.7m LoN Straight Curvature 2.5m Working Width

Table 1: Class A & B Post Spacing Ranges

Deflection

- Deflection is dependent on post spacing, as per RDN 06-02.
- Tested: 2.21 m under TL 4 conditions (An 8000 kg vehicle at 80 km/hr impacting at 15 degrees post spacing 3.2 m). For other speeds refer to Supplier.
- Where the Brifen system is specifically proposed during design and an accepted configuration is used, accepted crash tested configurations and deflections may be adopted. These have been summarised in Table 2 below.

Product	Test Designation	Post Spacing (m)	LoN (m)	Curvature	Working Width (m)
Brifen TL4	4-12	3.2	253	Straight	2.21
	4-11	6.4	41.7	Straight	2.5

Table 2: Accepted Crash Tested Configurations and Deflections

Length of Redirection

- Minimum Length of Redirection (LoR) is 60m

Point of Redirection

- Point of Redirection is 11.2m from the end of the anchor (from post 5)

Foundations

- Installed with concrete footings.
- Default Post Foundation: 250Øx750D (mm)

Offset from Back of Kerb & Channel

- Shall not be offset from the edge of traffic lane by less than 3.0 m unless approval has been obtained in accordance with Table V6.3 in VicRoads Supplement to Austroads Guide to Road Design – Part 6.
- Offsets of WRSB from back of kerb and channel have been outlined in Table 3 below.

Operating speed (km/h)	Desirable offset (m)	Minimum offset (m)
> 90	≥ 4.5	0 and 1.2 to 1.8
70 to 90	≥ 4.0	0 and 1.2 to 1.8
<70	≥ 2.5	0 and 1.0 to 2.0

Table 3: Offsets from Back of Kerb and Channel.

Source: Table V6.4 of VicRoads Supplement to Austroads Guide to Road Design - Part 6

- Where the offset from traffic lane to safety barrier is lower than desirable (3.0m), consideration shall be given to the probability of nuisance hits and the effects of a semi-rigid barrier vs flexible barrier on maintenance costs.
- Preferably should not be installed behind kerbs. If kerbing is essential then appropriate offsets shall be met in accordance with Table V6.4 in VicRoads Supplement to Austroads Guide to Road Design – Part 6.

Barrier Height Correction

- If placed within 1.5 m of the edge of carriageway the barrier height is measured relative to the pavement surface.
- At greater offsets the barrier height shall be measured relative to the ground surface at the barrier location

End Treatments

- The Brifen WRSB system comes with its own gating end treatment.
- Please refer to Brifen Wire Rope Terminal Detail Sheet for further details.

Delineators

- Post caps shall be fitted with 50 x 100 mm Class 1A retro-reflective material, as defined in AS/NZS 1906.2, or placed on the front top of the post above the wire ropes.
- Delineators shall be installed at approximately 12.5 to 15 m spacing. Delineators shall not be placed on flared sections.

Limitations

- The cross slope should not be steeper than 10% for the area between the edge of traffic lane and the barrier, and the area immediately behind the barrier for the width of the deflection (working width).
- Refer to VicRoads Standard Drawing SD3573 and VicRoads Road Design Note 06-02 for further guidance on the verge and permissible slopes requirements on single carriageways.
- Refer to VicRoads Standard Drawing SD2001 for kerb types.
- Shall not be used on curves less than 200 m radius without seeking guidance from the Supplier regarding the necessary changes in post spacing.
- Shall not be used on either crest or sags curves with a K value less than 30.

Installation & Maintenance

- Installation and maintenance shall be in accordance with the Supplier Brifen WRSB Product and Installation Manual and VicRoads Wire Rope Safety Barrier Installation and Maintenance Guideline.
- *Parts to be Replaced after Impact:*
Damaged posts and post caps
- *Parts Typically Re-Useable after Impact:*
Wire Rope (refer to manufacturer).

References

- Supplier Brifen Installation and Maintenance Manual
- VicRoads Standard Section 711 – Wire Rope Safety Barrier
- VicRoads Supplement to Austroads Guide to Road Design – Part 6.
- VicRoads Wire Rope Safety Barrier Installation and Maintenance Guideline
- VicRoads Road Design Note 06-02 – The Use of Wire Rope Safety Barriers (WRSB)

